ABSTRACT

CHARACTERIZATION OF NISIN MICROSPHERE USING ALGINATE - GELATIN (2.25 % : 0.25 %) AS MATRIX (Prepared Using Ionotropic Gelation Aerosolization Technique)

I Nyoman Suryadinata Astina Putra

The aim of this research is to characterize nisin microsphere prepared using ionotropic gelatin aerosolization technique with sodium alginate and gelatin (2.25 % : 0.25 %) as matrix polymer and calcium chloride (1.5 M) as the cross linker. The interaction between polymer and nisin was confirmed by the changes in the intensity and wave number on the FTIR spectra of nisin microsphere. X-Ray Diffraction of nisin microsphere showed amorf characteristic with no observable sharp peak of nisin in the diffractogram. Nisin microsphere has yield value 46.97 $\pm$ 4.19 % and has moisture content 10.72 $\pm$ 0.48 %. Nisin microsphere is spherical with smooth surface structure as displayed by scanning electron microscope (SEM). Nisin microsphere has size in the range 2.861 - 7.439 µm with mean particle diameter 4.048 $\pm$ 0.069 µm. Mean particle diameter and particle size distribution were determined by optical microscope. Swelling characteristic was determined using gravimetric swelling index procedure and the maximum swelling index is 315.33 $\pm$ 30.08 % achieved within 1 hr. In comparison with nisin microsphere prepared using only sodium alginate (2.5 %) there is significance different ($P < 0.05$) in mean particle diameter.

Keywords: Nisin, Microsphere, Ionotropic Gelation, Sodium Alginate, Gelatin, Characterization.